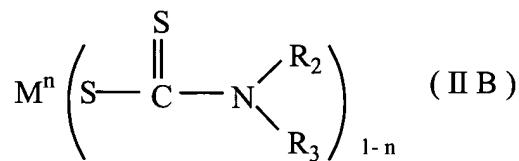


THAT WHICH IS CLAIMED IS:

1. A method of treating cancer in human cells and for sensitizing tumors to conventional cancer chemotherapy by blocking the P-glycoprotein membrane toxin extrusion pump and for sensitizing AIDS patients to anti-retroviral therapy by blocking
5 the P-glycoprotein membrane toxin extrusion pump comprising administering a therapeutically effective amount of a dithiocarbamate thiolate anion of the formula:



wherein R₂ and R₃ are the same or different and represent hydrogen, and unsubstituted or
10 substituted alkyl, alkenyl, aryl, alkoxy, and heteroaryl groups; M is an alkali metal selected from the group consisting of from the group consisting of sodium, potassium, calcium, magnesium, barium, and lithium; and n is the valence of the alkali metal.

2. The method according to Claim 1 wherein said dithiocarbamate thiolate is
15 in the form of a pharmaceutically acceptable salt.

3. The method according to Claim 1 wherein said dithiocarbamate thiolate is administered in a dosage of between about 125 to about 1000 mg per day of body weight.

20 4. The method according to Claim 1 wherein said dithiocarbamate thiolate is administered in a dosage of between about 250 to about 500 mg per day.

5. The method according to Claim 1 wherein said dithiocarbamate thiolate is administered parenterally.

25

6. The method according to Claim 1 wherein said dithiocarbamate thiolate is administered orally.

7. The method according to Claim 1 wherein said dithiocarbamate thiolate is administered in combination with a metal complex that includes a metal selected from the group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron, 5 manganese, nickel, silver, titanium, vanadium, selenium and zinc, and an ion selected from the group consisting of sodium, potassium, calcium, magnesium, barium, or lithium or an anion of small molecular weight.

8. The method according to Claim 1 wherein said dithiocarbamate thiolate is 10 administered in combination with a metal chelate that includes an ion selected from the group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron, manganese, nickel, silver, titanium, vanadium, selenium and zinc.

9. The method according to Claim 7 wherein said metal complex is 15 administered separately as a chelate with an organic anion.

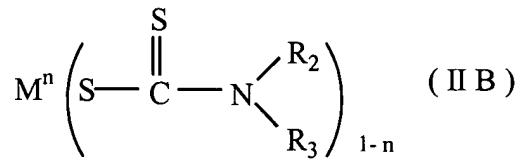
10. The method according to Claim 1 wherein said ion is an organic anion selected from the group consisting of citrate, acetate, glyconate, glycinate, propionate and lactate.

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11. The method according to Claim 1 wherein said dithiocarbamate thiolate is administered in combination with a metal chelate that includes an ion selected from the group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron, manganese, nickel, silver, titanium, vanadium, selenium and zinc, and an ion selected 25 from the group consisting of sodium, potassium, calcium, magnesium, barium, and lithium or an anion of small molecular weight.

12. A method of reducing hypoxic or ischemic damage to the cardiovascular system of a human comprising administering a therapeutically effective amount of a dithiocarbamate thiolate anion of the formula:

5



wherein R₂ and R₃ are the same or different and represent hydrogen, and unsubstituted or substituted alkyl, alkenyl, aryl, alkoxy, and heteroaryl groups; M is an alkali metal selected from the group consisting of from the group consisting of sodium, potassium, calcium, magnesium, barium, and lithium; and n is the valence of the alkali metal.

13. The method according to Claim 12 wherein said dithiocarbamate thiolate anion is in the form of a pharmaceutically acceptable salt.

15 14. The method according to Claim 12 wherein said dithiocarbamate is administered in a dosage of between about 125 to about 1000 mg per day of body weight.

15. The method according to Claim 12 wherein said dithiocarbamate is administered in a dosage of between about 250 to about 500 mg per day for disulfiram.

20

16. The method according to Claim 12 wherein said dithiocarbamate is administered parenterally.

25 17. The method according to Claim 12 wherein said dithiocarbamate is administered orally.

18. The method according to Claim 12 wherein said dithiocarbamate is administered in combination with a metal complex that includes an ion selected from the group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron, manganese, nickel, silver, titanium, vanadium, selenium and zinc.

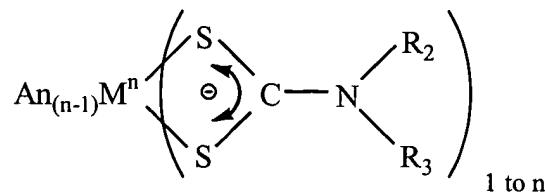
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19. The method according to Claim 12 wherein said metal complex is administered separately as a chelate with an organic anion.

20. The method according to Claim 12 wherein said an organic anion is selected from the group consisting of citrate, acetate, glyconate, glycinate, propionate and lactate.

21. The method according to Claim 12 wherein said dithiocarbamate is administered in combination with a metal chelate that includes an ion selected from the group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron, manganese, nickel, silver, titanium, vanadium, selenium and zinc.

22. A method of reducing hypoxic or ischemic damage to the cardiovascular system of a human comprising administering a therapeutically effective amount of a dithiocarbamate thiolate anion of the formula:



25 wherein R₂ and R₃ are the same or different and represent hydrogen, and unsubstituted or substituted alkyl, akenyl, aryl, alkoxy, and heteroaryl groups; M is an alkali metal selected from the group consisting of sodium, potassium, calcium, magnesium, barium, and lithium; An is a metal selected from the group consisting of titanium, vanadium,

chromium, iron, cobalt, nickel, copper, silver, silver, and gold; n is the valence of the metal.

23. The method according to Claim 22 wherein said dithiocarbamate thiolate
5 anion is in the form of a pharmaceutically acceptable salt.

24. The method according to Claim 22 wherein said dithiocarbamate is
administered in a dosage of between about 125 to about 1000 mg per day of body weight.

10 25. The method according to Claim 22 wherein said dithiocarbamate is
administered in a dosage of between about 250 to about 500 mg per day for disulfiram.

26. The method according to Claim 22 wherein said dithiocarbamate is
administered parenterally.

15 27. The method according to Claim 22 wherein said dithiocarbamate is
administered orally.

28. The method according to Claim 22 wherein said dithiocarbamate is
20 administered in combination with a metal complex that includes an ion selected from the
group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron,
manganese, nickel, silver, titanium, vanadium, selenium and zinc.

29. The method according to Claim 22 wherein said metal complex is
25 administered separately as a chelate with an organic anion.

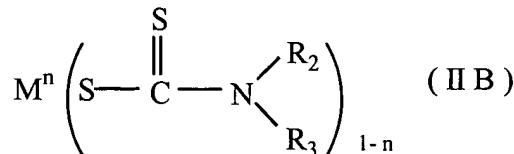
30. The method according to Claim 22 wherein said an organic anion is
selected from the group consisting of citrate, acetate, glyconate, glycinate, propionate and
lactate.

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31. The method according to Claim 22 wherein said dithiocarbamate is administered in combination with a metal chelate that includes an ion selected from the group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron, manganese, nickel, silver, titanium, vanadium, selenium and zinc.

5

32. A method for treating asthma or arthritis in humans comprising administering a therapeutically effective amount of a dithiocarbamate thiolate anion of the formula:



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wherein R_2 and R_3 are the same or different and represent hydrogen, and unsubstituted or substituted alkyl, alkenyl, aryl, alkoxy, and heteroaryl groups; M is an alkali metal selected from the group consisting of from the group consisting of sodium, potassium, calcium, magnesium, barium, and lithium; and n is the valence of the alkali metal.

15

33. The method according to Claim 32 wherein said dithiocarbamate thiolate anion is in the form of a pharmaceutically acceptable salt.

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34. The method according to Claim 32 wherein said dithiocarbamate is administered in a dosage of between about 125 to about 1000 mg per day of body weight.

35. The method according to Claim 32 wherein said dithiocarbamate is administered in a dosage of between about 250 to about 500 mg per day for disulfiram.

25

36. The method according to Claim 32 wherein said dithiocarbamate is administered parenterally.

37. The method according to Claim 32 wherein said dithiocarbamate is administered orally.

38. The method according to Claim 32 wherein said dithiocarbamate is 5 administered in combination with a metal complex that includes an ion selected from the group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron, manganese, nickel, silver, titanium, vanadium, selenium and zinc.

39. The method according to Claim 32 wherein said metal complex is 10 administered separately as a chelate with an organic anion.

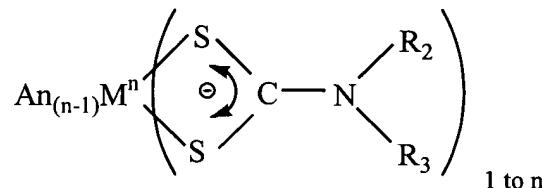
40. The method according to Claim 32 wherein said an organic anion is selected from the group consisting of citrate, acetate, glyconate, glycinate, propionate and lactate.

15

41. The method according to Claim 32 wherein said dithiocarbamate is administered in combination with a metal chelate that includes an ion selected from the group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron, manganese, nickel, silver, titanium, vanadium, selenium and zinc.

20

42. A method for treating asthma or arthritis in humans comprising administering a therapeutically effective amount of a dithiocarbamate thiolate anion of the formula:



25

wherein R_2 and R_3 are the same or different and represent hydrogen, and unsubstituted or substituted alkyl, alkenyl, aryl, alkoxy, and heteroaryl groups; M is an alkali metal selected from the group consisting of sodium, potassium, calcium, magnesium, barium, and lithium; An is a metal selected from the group consisting of titanium, vanadium, 5 chromium, iron, cobalt, nickel, copper, silver, silver, and gold; n is the valence of the metal.

43. The method according to Claim 42 wherein said dithiocarbamate thiolate anion is in the form of a pharmaceutically acceptable salt.

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44. The method according to Claim 42 wherein said dithiocarbamate is administered in a dosage of between about 125 to about 1000 mg per day of body weight.

15 45. The method according to Claim 42 wherein said dithiocarbamate is administered in a dosage of between about 250 to about 500 mg per day for disulfiram.

46. The method according to Claim 42 wherein said dithiocarbamate is administered parenterally.

20 47. The method according to Claim 42 wherein said dithiocarbamate is administered orally.

25 48. The method according to Claim 42 wherein said dithiocarbamate is administered in combination with a metal complex that includes an ion selected from the group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron, manganese, nickel, silver, titanium, vanadium, selenium and zinc.

49. The method according to Claim 42 wherein said metal complex is administered separately as a chelate with an organic anion.

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50. The method according to Claim 42 wherein said an organic anion is selected from the group consisting of citrate, acetate, glyconate, glycinate, propionate and lactate.

5 51. The method according to Claim 42 wherein said dithiocarbamate is administered in combination with a metal chelate that includes an ion selected from the group consisting of arsenic, bismuth, cobalt, copper chromium, gallium, gold iron, manganese, nickel, silver, titanium, vanadium, selenium and zinc.

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